

In the Claims

Please amend the claims as follows:

Claims 1-51 (Canceled).

52. (Currently Amended) An assay kit comprising packaging material containing 1) a luminogenic substrate of a luminescent enzyme, or a luminogenic enzyme; and 2) an organic compound in an amount for reducing luminescence that is not dependent on the presence of an analyte by at least about 10 fold and for reducing luminescence that is dependent on the presence of an analyte by less than about 7 fold,

wherein the organic compound has at least one carbon-sulfur single bond (C-S), carbon-sulfur double bond (C=S), carbon-selenium single bond (C-Se), or carbon-selenium double bond (C=Se).

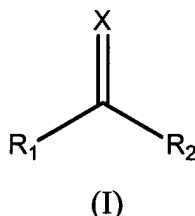
53. (Currently Amended) An assay kit comprising packaging material containing 1) a luminogenic substrate of a luminescent enzyme, or a luminogenic enzyme; and 2) an organic compound in an amount for reducing luminescence generated by luminogenic molecules not bound to an enzyme by at least about 10 fold and for reducing luminescence generated by luminogenic molecules bound to an enzyme by less than about 7 fold,

wherein the organic compound has at least one carbon-sulfur single bond (C-S), carbon-sulfur double bond (C=S), carbon-selenium single bond (C-Se), or carbon-selenium double bond (C=Se).

54. (Currently Amended) An assay kit comprising packaging material containing 1) a luminogenic substrate of a luminescent enzyme, or a luminogenic enzyme; and 2) an organic compound in an amount for reducing autoluminescence by at least about 10 fold, and for reducing luminescence that is dependent on the presence of an analyte by less than about 7 fold,

wherein the organic compound has at least one carbon-sulfur single bond (C-S), carbon-sulfur double bond (C=S), carbon-selenium single bond (C-Se), or carbon-selenium double bond (C=Se).

55. (Previously Presented) The kit of any one of claims 52, 53, and 54, wherein the organic compound is a compound of formula (I):



wherein

X is S or Se;

R₁ and R₂ are each independently hydrogen, (C₁-C₂₀)alkyl, (C₃-C₈)cycloalkyl, (C₁-C₂₀)alkoxy, (C₂-C₂₀)alkenyl, (C₂-C₂₀)alkynyl, aryl, heteroaryl, or NR_aR_b; or R₁ and R₂ taken together form a 5, 6, 7, or 8 membered saturated or unsaturated ring comprising carbon and optionally comprising 1, 2, or 3 heteroatoms selected from oxy (-O-), thio (-S-), or nitrogen (-NR_c-), wherein the ring is optionally substituted with 1, 2, or 3 halo, hydroxy, oxo, thioxo, carboxy, (C₁-C₂₀)alkyl, (C₃-C₈)cycloalkyl, (C₁-C₂₀)alkoxy, (C₁-C₂₀)alkanoyl, (C₁-C₂₀)alkoxycarbonyl, (C₂-C₂₀)alkenyl, (C₂-C₂₀)alkynyl, aryl, or heteroaryl; and

R_a, R_b and R_c are each independently hydrogen, (C₁-C₂₀)alkyl, (C₃-C₈)cycloalkyl, (C₂-C₂₀)alkenyl, (C₁-C₂₀)alkanoyl, (C₁-C₂₀)alkoxycarbonyl, (C₂-C₂₀)alkynyl, aryl, heteroaryl;

wherein any (C₁-C₂₀)alkyl, (C₃-C₈)cycloalkyl, (C₁-C₂₀)alkoxy, (C₂-C₂₀)alkenyl, (C₁-C₂₀)alkanoyl, (C₁-C₂₀)alkoxycarbonyl, or (C₂-C₂₀)alkynyl of R₁, R₂, R_a, R_b, and R_c is optionally substituted with one or more halo, hydroxy, mercapto, oxo, thioxo, carboxy, (C₁-C₂₀)alkanoyl, (C₁-C₂₀)alkoxycarbonyl, aryl, or heteroaryl; and wherein any aryl or heteroaryl is optionally substituted with one or more halo, hydroxy, mercapto, carboxy, cyano, nitro, trifluoromethyl, trifluoromethoxy, (C₁-C₂₀)alkanoyl, (C₁-C₂₀)alkanoyloxy, sulfo, or (C₁-C₂₀)alkoxycarbonyl; or a salt thereof.

56. (Previously Presented) The kit of any one of claims 52, 53, and 54, wherein the organic compound is a compound of formula R₃SH wherein

R₃ is (C₁-C₂₀)alkyl, (C₃-C₈)cycloalkyl, (C₂-C₂₀)alkenyl, (C₂-C₂₀)alkynyl, aryl, or heteroaryl;

any (C₁-C₂₀)alkyl, (C₃-C₈)cycloalkyl, (C₂-C₂₀)alkenyl, or (C₂-C₂₀)alkynyl of R₃ is optionally substituted with one or more halo, hydroxy, mercapto, oxo, thioxo, carboxy, (C₁-C₂₀)alkanoyl, (C₁-C₂₀)alkoxycarbonyl, aryl, heteroaryl, or NR_dR_e;

R_d and R_e are each independently hydrogen, (C₁-C₂₀)alkyl, (C₃-C₈)cycloalkyl, (C₂-C₂₀)alkenyl, (C₂-C₂₀)alkynyl, (C₁-C₂₀)alkanoyl, (C₁-C₂₀)alkoxycarbonyl, aryl, or heteroaryl; and

any aryl or heteroaryl is optionally substituted with one or more (1, 2, 3, or 4) halo, mercapto, hydroxy, oxo, carboxy, cyano, nitro, trifluoromethyl, trifluoromethoxy, (C₁-C₂₀)alkanoyl, (C₁-C₂₀)alkanoyloxy, sulfo or (C₁-C₂₀)alkoxycarbonyl;

or a salt thereof.

57. (Previously Presented) The kit of any one of claims 52, 53, and 54, wherein the organic compound is a compound of formula R₄NCS wherein

R₄ is (C₁-C₂₀)alkyl, (C₃-C₈)cycloalkyl, (C₂-C₂₀)alkenyl, (C₂-C₂₀)alkynyl, aryl, or heteroaryl;

any (C₁-C₂₀)alkyl, (C₃-C₈)cycloalkyl, (C₂-C₂₀)alkenyl, or (C₂-C₂₀)alkynyl of R₄ is optionally substituted with one or more halo, hydroxy, mercapto, oxo, thioxo, carboxy, (C₁-C₂₀)alkanoyl, (C₁-C₂₀)alkoxycarbonyl, aryl, heteroaryl, or NR_fR_g;

R_f and R_g are each independently hydrogen, (C₁-C₂₀)alkyl, (C₃-C₈)cycloalkyl, (C₂-C₂₀)alkenyl, (C₂-C₂₀)alkynyl, (C₁-C₂₀)alkanoyl, (C₁-C₂₀)alkoxycarbonyl, aryl, or heteroaryl; and

any aryl or heteroaryl is optionally substituted with one or more (1, 2, 3, or 4) halo, mercapto, hydroxy, oxo, carboxy, cyano, nitro, trifluoromethyl, trifluoromethoxy, (C₁-C₂₀)alkanoyl, (C₁-C₂₀)alkanoyloxy, sulfo, or (C₁-C₂₀)alkoxycarbonyl;

or a salt thereof.

58. (Previously Presented) The kit of any one of claims 52, 53 and 54, wherein the organic compound is a compound of formula R₅-X-R₆ wherein

X is -S- or -Se-;

R₅ is (C₁-C₂₀)alkyl, (C₃-C₈)cycloalkyl, (C₂-C₂₀)alkenyl, (C₂-C₂₀)alkynyl, aryl, or heteroaryl; and

R₆ is hydrogen, (C₁-C₂₀)alkyl, (C₃-C₈)cycloalkyl, (C₂-C₂₀)alkenyl, (C₂-C₂₀)alkynyl, aryl, or heteroaryl;

or R₅ and R₆ taken together with X form a heteroaryl;

any (C₁-C₂₀)alkyl, (C₃-C₈)cycloalkyl, (C₂-C₂₀)alkenyl, or (C₂-C₂₀)alkynyl of R₅ or R₆ is optionally substituted with one or more halo, hydroxy, mercapto, oxo, thioxo, carboxy, (C₁-C₂₀)alkanoyl, (C₁-C₂₀)alkoxycarbonyl, aryl, heteroaryl, or NR_kR_m;

R_k and R_m are each independently hydrogen, (C₁-C₂₀)alkyl, (C₃-C₈)cycloalkyl, (C₂-C₂₀)alkenyl, (C₂-C₂₀)alkynyl, (C₁-C₂₀)alkanoyl, (C₁-C₂₀)alkoxycarbonyl, aryl, or heteroaryl; and

any aryl or heteroaryl is optionally substituted with one or more halo, mercapto, hydroxy, oxo, carboxy, cyano, nitro, trifluoromethyl, trifluoromethoxy, (C₁-C₂₀)alkanoyl, (C₁-C₂₀)alkanoyloxy, sulfo or (C₁-C₂₀)alkoxycarbonyl;

or a salt thereof.

59. (Previously Presented) The kit of any one of claims 52, 53, and 54, wherein the enzyme substrate and the compound are each contained in a separate container.

60. (Previously Presented) The kit of any one of claims 52, 53, and 54, wherein the enzyme substrate and the compound are contained in a single container.

61. (Previously Presented) The kit of any one of claims 52, 53, and 54, further comprising a buffer solution suitable for use in a luminescent assay.

62. (Previously Presented) The kit of claim 61, wherein the enzyme substrate and the buffer solution are contained in a single container.

63. (Previously Presented) The kit of claim 61, wherein the compound and the buffer solution are contained in a single container.

64. (Previously Presented) The kit of any one of claims 52, 53, and 54, further comprising a substrate for a second luminescent enzyme.

65. (Previously Presented) The kit of any one of claims 52, 53, and 54, further comprising a quenching agent for a luminescent enzyme reaction.

66. (Currently Amended) The kit of any one of claims 52, 53, and 54, wherein the substrate is a substrate for firefly luciferase or a substrate for a *Renilla* luciferase.

67. (New) The kit of any one of claims 52, 53, or 54, wherein the organic compound is not a polypeptide or protein comprising one or more mercapto (C-SH) groups.

68. (New) The kit of any one of claims 52, 53, or 54, wherein the organic compound does not comprise one or more mercapto (C-SH) groups.